

Volume 12: No. 4 Cultural Resources Management • National Park Service
1989

A Technical Bulletin for Parks, Federal Agencies, States, Local Governments, and
the Private Sector

Difficult Choices and Hard-Won Successes in Maritime Preservation

Preserving the remnants of America's maritime past poses special challenges and problems. Ships were built to last for a few decades, and then, if not on the bottom, were torn apart with sledges, axes, or cutting torches by shipbreakers. Sailors lived a hard life at sea and ashore; often illiterate they left little written record of their life, times, and travails. Scores of lighthouses, lifesaving stations, and other marine structures were built on isolated shores, on surf-tossed beaches, or on crumbling cliffs. Subjected to the powerful fury of ocean waves, and the corrosive salt air of the marine environment, many succumbed to the sea. Those buildings, wharves, and working waterfronts that survived the decline of America as a seafaring nation often have not survived waterfront redevelopment and urban renewal.

Ships, lighthouses, and other maritime relics are often saved by people who simply loved old ships and nautical lore, perhaps due to love of history, pride in achievements past, or the ancestral tie to salt water. The romantic appeal of ship-saving has resulted in maintaining more than a hundred vessels afloat and ashore as museum exhibits. Major collections of ships now exist at several maritime and naval museums throughout the United States, but the majority of preserved historic vessels are single ship operations, many privately owned, often by people who might not otherwise identify themselves as historic preservationists. Even those who are preservationists, cultural resource managers, professional curators, historical architects, or historians are often hard pressed to translate landbased experience into action to save maritime cultural resources.

The inaccessibility of the largest number of maritime cultural resources has created other, more unique problems. Shipwrecks, originally the domain of salvors, then treasure hunters seeking lost riches or profit from marine antiques, are plundered by souvenir hunters who do not see wrecks as historical places under- water, but rather view themselves as rescuers of marine lore from Davy Jones' locker. The concept of shipwrecks as archeological sites is relatively new; even some cultural resource professionals persist in seeing only famous, historically-significant wrecks as being worthy of protection. Yet shipwrecks, resting on the bottom, are often a well-preserved record of the maritime past, and human history in general, that should be recorded and left in place to await careful study.

The fragile nature of maritime resources, however, has been made clear. Ships built to wage war on the high seas, harvest the ocean for food, or carry people or goods under sail or steam, once their careers are over, are difficult to save as idle, wharf-bound, inanimate structures. Idle ships sink, rot, or burn, be they on land or in the water. As this issue was prepared, reports were received that the 1909 ferry *G.A. Boeckling*, listed in the National Register of Historic Places, burned in Sandusky, Ohio. The last original Biloxi schooner, *Margaret Emilie*, too rotten to be saved, was recently dismantled. Other vessels

are threatened, and for many, once they are gone, we will not see their like again. There is only one *Fredonia*-type schooner remaining in the United States; these vessels were the typical American fishing schooners of the early 20th century. There is also only one T-2 tanker, which now awaits scrapping. Hundreds of T-2 tankers ferried fuel and oil into battle in World War II. Lighthouses corrode or topple; offshore lights face abandonment and decay. Historic shipwrecks are treated as commodities, not resources. Historic docks, wharves, warehouses, chandleries, and sail lofts vanish or lose their historic character as waterfronts are revitalized.

Therefore, maritime preservationists face difficult choices; to save or not to save, to invest large sums of money, to limit their efforts, and to seemingly struggle against the tide of public disinterest and conflicting interests. Yet, as noted in the writer's overview article, success has been achieved in many cases. It has been hard-won success. Because of difficult choices made now, and with the lessons learned from the successes of today, maritime preservation will hopefully succeed in rescuing many of the more than 270 historic ships, 1,000 lighthouses, countless marine structures, thousands of historic shipwrecks, and the memories and experiences of those alive now who worked and lived in close interaction with the sea and inland waters of the United States. That is why this issue of the *CRM Bulletin* has been prepared.

These articles highlight some of the difficult choices, how they have been met, and a few notable successes. John S. Carter, in a frank discussion, grapples with the issue of when a historic ship has to die. Lynn R. Hickerson tackles a very real problem; the need of keeping some ships operating in order to save them. Larry Murphy cogently articulates the problem of focusing research and recovery efforts on individual ships, proposing instead a thematic and geographic approach that looks at groups of wrecks as representatives of the sweep of maritime history. Toni Carrell explores the tragic aspect of shipwrecks—the status of some as graves—and the problems this poses for managers, relatives and descendants.

Daniel Lenihan shows how shipwrecks can be carefully studied and documented while leaving them virtually untouched for divers to enjoy and future generations to study and experience through the use of new technology and a careful, nondestructive approach. Stephen Haller also explores the issue of documentation; his article, however, clearly demonstrates the importance of doing careful research in the archives before diving, restoration, or interpretation begins. Carol Minick's update on the Bicentennial Lighthouse fund is an indicator of how a few dollars form the incentive to raise additional money, stimulate interest, and promote preservation, in this case made possible by dedicated lobbying of Congressional support and the sweat and labor of local communities responding to the challenge.

Don Birkholz's article exemplifies the theme of this issue. He demonstrates how a difficult choice led to a hard-won success. One of the most difficult choices made in maritime preservation in recent years was the National Park Service's decision to pull the National Historic Landmark steam schooner *Wapama* from the water and place her on a barge. Without a near-complete reconstruction, *Wapama will* never float again. Yet from her dry-rotted hull, scientists from U.S. Borax and the University of California have achieved a victory over dry rot that can be applied to other vessels before they too face *Wapama's* fate.

—JPD

Grim Realities, High Hopes, Moderate Gains:

The State of Historic Ship Preservation

James P. Delgado

While maritime preservation is concerned with all aspects of the Nation's seafaring past, including lighthouses, shipyards, canals, and sail lofts, the major effort and attention has been devoted to historic ships. The ship is the focus of maritime culture, and all other types of maritime cultural resources were originally created to serve or assist ships and shipping.

Historic ship preservation in the United States dates to the last century, when public interest and outcry led to the saving of USS Constitution from scrapping. Efforts to save other historic vessels slowly followed, in large part after the Depression, with the establishment of maritime museums that included large ships—Mystic Seaport being the first major example. Other projects followed—the saving of historic naval vessels, the creation of San Francisco Maritime Museum and South Street Seaport, which showcased collections of ships—and were matched by efforts around the country to save individual vessels.

The high hopes of the ship savers often ran afoul of the grim realities of maritime preservation. The corrosive marine environment, high costs, diminishing maritime skills, limited funds, and conflicting priorities plagued work to preserve historic ships. A special one-time appropriation of funds from Congress in 1976 aided some projects and also got others started that may have never had a chance at success otherwise. When the money was gone, the projects faltered—and in some cases died.

The need for additional money and assistance was presented to Congress year after year. Finally, in 1984, the Senate Interior Appropriations Committee asked the National Park Service to conduct a survey of the Nation's historic maritime resources, recommend priorities for their preservation, and identify appropriate Federal and private sector roles in addressing those priorities. This request led the Service to create the National Maritime Initiative in 1985. Since then, a computerized inventory has been completed of some 274 historic vessels in

the United States that are being operated, displayed, or preserved. Some are restaurants, others are museums, and a large number continue to operate as excursion vessels, private yachts, or as working fireboats. Working from the inventory, some 164 of these vessels have been or will soon undergo a comprehensive evaluation to see if they merit designation as National Historic Landmarks.

This work has meant detailed inspection visits to most vessels listed in the inventory. This unique opportunity has resulted in the collection of information, plans, and surveys for some 170 ships, providing us at this juncture with the most comprehensive assessment ever of the state of historic ship preservation.

The difficulties of maritime preservation become evident when looking at the Nation's historic ships in toto. Since 1985, the inventory has dropped nine historic vessels: among them, the dredge *Kennedy* was scrapped by the US Army Corps of Engineers; the oyster sloop *Annie R. Shillingsburg*, too deteriorated for repair or restoration, lies half sunk in a New Jersey marsh; the Biloxi schooner *Margaret Emilie* and the tug *Seguin* (featured in another article in this issue) were dismantled when restoration was not feasible; the excursion steamer *Catalina*, her ownership disputed, was taken from the United States and is now a restaurant in Ensenada, Mexico; and the coal-fired railroad ferry *Chief Wawatam* was sold in Canada to be cut down to a barge, with most of her machinery being scrapped. The declining oyster beds of Chesapeake and Delaware bays are causing many historic skipjack and oyster sloop owners to lay up their vessels, sometimes permanently.

Other vessel owners have sold or are in the process of selling their vessels. The Harry Lundeberg school sold most of its fleet of historic vessels, including Lightship *No. 84, Dauntless*, and *Capt. James Cook*. Lightship *No. 84*, in Brooklyn for restaurant conversion, is reportedly up for sale again, as is *Dauntless*. *Victory Chimes*, purchased in 1988 by Domino's Pizza, Inc., and renamed *Domino Effect*, is listed with a Florida broker, for sale once again. The Presidential Yacht *Sequoia*, rescued from oblivion and beautifully restored, is now laid up in a Norfolk shipyard, her future uncertain since not enough money has been raised to pay off the ship's debts and provide for a maintenance endowment, requirements to be met before she again enters Presidential service.

Other vessels face major preservation needs. The Army Corps of Engineers inspection launch *Suisun*, recently restored to her 1914 splendor, was badly damaged in an engine-room fire and explosion and must undergo substantial reconstruction and restoration. The fleet of historic ships at San Francisco Maritime National Historical Park requires a major restoration effort estimated at \$16 million or more. A number of restored historic vessels need homes, among them *Sequoia*, Lightship *No. 112* (Nantucket), and the Lightship *WLV-605* (Relief).

However, while the grim realities of maritime preservation are apparent, so are many notable successes. More historic vessels have been recognized as national treasures—the less than 30 designated ships in 1984 have risen to 69 National Historic Landmark vessels. As part of the National Maritime Initiative, the Historic American Buildings Survey/Historic American Engineering Record is reviving the Historic American Merchant Marine Survey by preparing detailed drawings and photographic records of vessels. Five vessels have been documented to date, with an additional three ships being documented in the summer of 1989. The maritime preservation community is rallying together, having formed the National Maritime Alliance in 1988. The National Trust for Historic Preservation has financed a preservation plan for Maryland's endangered historic skipjack fleet, working closely with the state.

The successes are best seen in touring the Nation's historic ships. Some are spectacular and well known, like the reconstruction and relaunching of the brig *Niagara* or the \$5 million dry-docking of the battleship *Texas*. Many gains are more moderate, important projects that have involved considerable community efforts. The forecandle deck of the four-masted ship *Falls of Clyde* was recently rebuilt; the Corps of Engineers inspection steamer *Sgt. Floyd* was restored and opened to the public in a new waterfront park in Sioux City, Iowa; and Tacoma, Washington, citizens saved and restored their historic 1929 *Fireboat No. 1*. South Street Seaport Museum received a \$250,000 grant from the State of New York to commence restoration of the schooner *Lettie G. Howard*, and Ray Williamson, new owner of the schooner *Mercantile*, had her restored this year in Rockland, Maine. At San Francisco Maritime National Historic Park, the steam schooner *Wapama's* dry rot has apparently been halted by a revolutionary new treatment (featured in this issue).

The restoration of the Presidential Yacht *Potomac*, in Oakland, California, is another major success in the making, as is the restoration of the towboat *Jean* by the State of Idaho. The riverboat *Delta King*, now a floating attraction in Sacramento, California, was a half-sunk rotting hulk only a few years ago. Other historic ships are being acquired and saved. The WWII aircraft carrier *Cabot* and the submarine *Requin* will form a new naval museum in New Orleans; Patriot's Point, near Charleston, has acquired the historic Coast Guard cutter *Ingham*; and the submarine *Croaker* was rescued and restored by the Naval and Servicemen's Park in Buffalo, New York.

What does all this mean? The grim realities will always be a part of maritime preservation. The drama and the beauty of ships and the seafaring tradition, though, sustain the high hopes of the ship savers, and the gains, balanced against the failures, are moderate when assessed individually, but significant and telling when viewed nationally. Historic ship preservation, with the right encouragement and carefully applied money and effort, could ultimately save the Nation's historic ships for future generations to enjoy and

appreciate, but the money and the effort must be conscientiously and consistently well applied, understanding that the passage will be storm-tossed, marked with uncharted shoals and rocks, and safe haven in port not always clear. The ship savers, however, must stay the course.

James P. Delgado is the Maritime Historian of the National Park Service and heads the National Maritime Initiative.

Recent National Park Service

Shipwreck Research Perspectives

Larry Murphy

Shipwrecks, after years of not-so-benign neglect, have become an object of concern for managers. This concern has prompted research archeologists to reconsider shipwrecks.

Ships, self-contained and mobile, form unique archeological sites sometimes located far from their associated culture. Because shipwrecks are usually unintentional, wrecks often occur in a place that has little to do with the ship. In fact, wrecks frequently happen in places the crew was frantically trying to avoid.

Two factors make shipwrecks particularly informative as archeological sites: they are often well-preserved compared to terrestrial sites of the same period, and all artifacts related to a particular ship are indisputably associated. By contrast, most land sites reflect archeological deposition through individual artifact loss or discard over a long period of time. But shipwrecks cast an entire, fully operational site into the archeological record during a single event. Such sites are extremely rare in terrestrial archeology, and this rarity has helped condition the way shipwreck research has been conducted.

Most current academic shipwreck research perceives wrecks as isolated sites disconnected from a larger context. Site-specific shipwreck research is somewhat like early historic preservation studies that sought to collect specific details for architectural reconstruction and particulars for site interpretation. A single wreck is usually evaluated in terms of its level of preservation and excavated to recover all the artifacts. Shipwreck archeology reports are normally descriptive accounts of the investigation, recovered cargo, and other materials, and it is a rare report that goes beyond description to discuss a wider wreck context. Most wreck studies conducted for CRM purposes have paralleled the academic research, in that only questions of "where" and "what" are addressed.

NPS CRM managers are concerned not only with what is located within their jurisdiction, but with its significance. NPS archeologists have become interested in developing approaches to include shipwreck data collection that ask the questions "how it occurred" and "why." This approach looks at shipwrecks as part of large cultural processes. Consequently, shipwreck locations are seen as the result of many complex, interrelated environmental and cultural factors, not just random accidents. It is assumed that general cultural patterns are reflected in maritime sites on all levels from site feature to region. Although each shipwreck is a direct result of an accident, shipwreck concentrations studied as a group represent a longitudinal perspective of human activity in an area. Interpretation of single sites as part of wreck collections takes in the broader context of social group interaction in a specific area.

The developing methodology is not wholly innovative, but combines elements from prehistoric and historical archeology. A regional approach has long been a part of the best prehistoric archeology. Regional studies investigate the interactions of social groups within a geographical region. Regional settlement and procurement patterns are reconstructed to provide an interpretive context for individual sites. The interpretation is ultimately directed toward understanding socio-cultural processes. This methodology is directly applicable to shipwreck research.

For example, recent work in Isle Royale National Park interpreted visible wreck remains as representative examples of the historical development of Great Lakes maritime commerce (*Submerged Cultural Resources Study: Isle Royale National Park*, edited by Daniel Lenihan, 1987). Current work on World War II period sites is interpreted within the context of international conflict and is examining the memorialization process and the way modern societies construct and revise their history. Planned Southeast Region shipwreck surveys will focus on socio-cultural processes of international development, expansion,

and competition. Spanish expansion into the Caribbean region and ensuing competition of other maritime powers are represented by numerous shipwreck concentrations reflecting trade and settlement patterns and material in use at the time of loss. Wreck concentrations allow investigation of undocumented activities such as smuggling, piracy, and local trade. The commercial and military relations between colonists and colonizer and among rival groups are reflected by regional vessel remains and cargoes. The present global system is a direct result of maritime behavior; consequently, comparative regional shipwreck studies will contribute to an understanding of the historical sequences and social processes responsible for its development and form.

Historical archeology contributes a great deal to shipwreck research concerned with a wide context. Historical shipwreck research, like all historical archeology, is uniquely capable of drawing on multiple data sources to understand cultural change over long time periods. The combined use of documents, ethnoarcheology, oral traditions, and ethnographic accounts aid in developing complex archeological inferences about human behavior. Documentary sources allow exercise of specific controls that are not available on undocumented sites. We can examine motives and perceptions of people whose material remains we are uncovering. Direct comparison between areas can be done with controls of specific variables, an important part of refining archeological inference methodology. Multiple data sources may enable the generation of archeological patterns or "signatures" for specific behaviors that will allow archeologists to recognize similar behavior in other undocumented sites. Historical archeological methodology applied to shipwreck research should let us discern active socio-cultural processes that account for variability within and between shipwreck collections that directly inform on how societies operate and change.

We are just beginning to exploit the research potential of shipwrecks as often well-documented, well-preserved sites containing a relatively complete in-use artifact inventory. The possibilities of developing and testing archeological principles and inferences about such things as cultural change, competition, expansion, commerce, and conflict are limited so long as shipwrecks are perceived as individual and unrelated sites. The NPS approach of investigating numerous sites within a region, prompted by CRM concerns, led to a reconsideration of shipwrecks as important archeological entities and expanded their interpretation context.

Larry Murphy is an archeologist with the Submerged Cultural Resource Unit, Southwest Regional Office, National Park Service.

Preserving Historic Steamboats

Through Operation

Lynn R. Hickerson

There are 61 steamboats remaining from the glory days of steam when every American port had as many steamboats at dock as we now have airplanes crowding the runways. Those grandly ornate floating palaces as well as their more pedestrian work-a-day sisters are all but gone forever from the American waterscape. Shall we save the last few? If so, how?

The National Trust for Historic Preservation, at its October 1988 National Preservation Conference in Cincinnati, sponsored a panel discussion to explore the ramifications of what seems to be a situation of conflicting Federal regulations and guidelines regarding the operation of historic steamboats.

At the present time there are six commercially-operated passenger steamboats in the U.S. The most famous, *Delta Queen*, has operated for 43 years as an overnight cruise vessel on the Ohio and Mississippi Rivers, lately thanks to a special Congressional ruling (subject of another article). *Virginia V*, the last of Seattle's "Mosquito Fleet" of small inter-island ferries, restored in 1979-80 with assistance from many including the National Trust, operates on Puget Sound, and does a fair business with wedding parties, cocktail cruises and day trips. Because she never went out of service long enough to lose her license, the owners (a non-profit support group) were able to restore the 1922-built wooden vessel while completely maintaining her historic integrity. After nine years of successful operation, she now needs some substantial repairs. If the necessary funds cannot be raised in time to get the work done before the license runs out, *Virginia V* will probably be put out of service. The current Coast Guard regulations that would govern a new license are much more stringent than those in effect when the original license was issued.

Four other opportunities are available for the public to experience the thrill of steamboating: Mystic Seaport Museum's *Sabino* (1908) carrying passengers from one end of the 17-acre riverfront museum on the Mystic River to the other; *Belle of Louisville* (1914) on the Ohio River, operated by the City of Louisville and Jefferson County for excursions and charters; and the excursion steamers *Ste. Claire* and *Columbia*, which run to Detroit's Boblo Island resort and theme park.

But what of other historic steamers not yet restored? Are these finite few condemned to static display, never again to demonstrate their wonderful powers of propulsion to a passenger audience on the water? According to an inventory recently completed by the National Maritime Initiative of the National Park Service, there are 61 historic steamboats (including tugs and cargo vessels) remaining intact in this country. Of the 61, the six mentioned are restored and operating, 32 are restored and displayed as static exhibits, eight are undergoing restoration, and 14 are laid up. Of these various steamers, 12 would like to operate and carry paying passengers in order to offset the cost of restoration and underwrite the upkeep. Of those laid up, most are potentially operable. Some of these need substantial work. For some, it would be necessary to manufacture new steam engines, a feat not attempted since the days of steam came to an end, but certainly possible. For some, it might be possible to incorporate engines from vessels too far gone for repair.

If we are to save these few remaining vessels for future generations to enjoy, the investment tax credit (ITC) privilege needs to be extended to commercial historic vessel restoration projects. This would open the possibility of private entrepreneurship providing part of the solution to the preservation of historic vessels instead of relying solely upon struggling nonprofit organizations or museums to save them all. There has been no chance of extending this economic incentive to vessel restorations up to now because standards for

the restoration of historic ships were not yet written. Without standards, as with land-based preservation projects, there is no method for measuring compliance, and thus, no basis for awarding the tax credit.

The ship preservation standards have been a major missing piece as the maritime preservation movement has developed over the last twenty years. That missing piece has now been provided. Ship preservation standards were drafted in 1988 by Michael Naab, who formerly directed the Columbia River Maritime Museum in Oregon, and for the past two years, assisted with the care of the fleet of historic ships at the San Francisco Maritime National Historical Park. The draft standards have been under National Park Service internal review over the past year, and will be published this summer. Drafts are available by writing the National Maritime Initiative, History Division (418), National Park Service, P.O. Box 37127, Washington, DC 20013-7127. After 90 days of external review, the ship preservation standards will be issued in final and be used nationwide. With the standards now in hand, we have reached consensus about the methodology and materials to be used in the restoration of historic ships. The investment tax credit should now be used to encourage private sector participation in the preservation of our Nation's dwindling inventory of historic ships.

Ship preservation projects using the investment tax credit, would, of course, be commercial projects. If historic ships are to be commercially viable, they—with rare exception—must operate. These vessels must be able to carry paying passengers. How is this possible? Can their operation be made realistically safe? Can the elaborately carved paneling of historic steamers be treated with fire retardants; can sprinklers be installed in order to retain those original materials that provide and enhance the historic character of the vessel and help tell its story; or can historic vessels be made to comply with a different standard rather than with present Coast Guard regulations, just as historic structures on land comply with a different standard for fire codes? *Would it not be possible to provide a realistic degree of safety on these venerable old vessels and then let the public decide if they want the experience or not?*

Steamboats no longer provide necessary or the-only-choice-available transportation routes; they provide what amounts to a luxury experience—by individual choice. There are people who choose to go on roller coasters, climb high mountains, scuba dive, explore caves, go down rushing rivers in rubber rafts and all kinds of activities some would view as dangerous and others would not. As long as a person makes an informed choice, has society not gone far enough to protect them?

Lynn Hickerson is with the Maritime Preservation Department of the National Trust for Historic Preservation.

Safety and Steamboats: *Delta Queen* as a Case History of Questions in the Operation of Historic Vessels

Kevin J. Foster

The maritime history of the United States has been enormously influenced by the laws passed to make water travel safer. These laws have changed how vessels were designed, built, and operated and have undoubtedly saved thousands of lives. Recently, however, historic vessels have occasionally been adversely affected by safety laws and regulations. In the early 1940s, many passenger vessels were driven out of business by the "Morro Castle Law" of 1939. This law forbade vessels with wooden superstructures to carry overnight passengers for hire, resulting in many vessels seeking foreign registry. Those that wished to continue operating in the U.S. were rebuilt to comply with the law. The entire superstructure of *Milwaukee Clipper*, a Great Lakes passenger vessel, now a National Historic Landmark in Chicago, was rebuilt of steel in 1941 to comply with the law. The same law was later interpreted to apply to river vessels, including the deluxe passenger steamboat *Delta Queen*. The Safety at Sea Law of 1966 strengthened the prohibition of wood in vessels. A steel river steamboat with

a wooden superstructure, *Belle of Louisville*, has been allowed to operate in excursion service only by undergoing extraordinary inspections.

The issue of passenger safety versus historic integrity crystallized after 1966, when the U.S. Coast Guard warned the owners of the historic steamboat *Delta Queen* that they could not carry passengers overnight after 1970. *Delta Queen* is enormously popular on the rivers and is a National Historic Landmark. The controversy that followed the Coast Guard ruling has drawn attention to the problems inherent in the operation of historic vessels.

Government Regulation of Vessel Safety

Early boats were particularly susceptible to everyday hazards such as boiler explosions, fires, and sinkings caused by hitting snags. Extraordinary dangers included being damaged in floods, tornadoes, and ice gorges. The lifetime of a steamboat on the Western Rivers in the 1840s and 1850s was estimated to be under five years. Owners were able to accept such losses only because profits were high enough to more than offset them. This unhappy situation changed very slowly.

Changes were made primarily due to governmental regulation of boats and the people who ran them. Government intervention forced builders and operators of steamboats to become more conscious of safety considerations in a way that commercial motivations would not. In 1838, Congress responded to the need for increased safety aboard steamboats and passed an act requiring the inspection of steamboats. In 1851, six steamboat disasters took more than 700 lives and caused Congress to tighten these safety regulations. The Steamboat Inspection Act of 1852 set standards for both boats and operators, and created a system of Federal inspection to oversee them. The Steamboat Inspection Service examined masters, mates, and engineers for professional competence and examined vessels for safety.

The Harter Act of 1898 allowed victims of steamboat disasters to sue vessel owners for damages if negligence in operation was proved and known to the owners. This Act made owners financially responsible for the design and operation of their vessels. The loss of 1,523 lives in the steamship *Titanic* disaster in 1912 also had immediate and long-lasting effects on vessel safety laws. Lifeboat capacity was required to equal the number of people aboard and new regulations made radio a more effective safety device. Later acts and regulations strengthened these laws considerably.

Recent major changes to safety laws came as a result of the disastrous fire aboard the passenger liner *Morro Castle* in 1936. As a result, Congress outlawed the use of wood in passenger vessel superstructures. This law differed from earlier safety laws by forbidding the use of the oldest and most widely used material for vessels. Previous safety laws had set levels of performance to be met rather than the prohibition of an entire class of building materials. No provision was made in the law for operation of historic vessels. Application of this law has been heavily criticized by the owners of historic vessels.

Delta Queen and Safety Laws

The best known vessel affected by the "Morro Castle Law" is the deluxe river steamboat *Delta Queen*. Built in 1928, *Delta Queen* has a wooden superstructure on a steel hull. She was built with every sort of safety device and received several subsequent safety upgrades. As a river steamer, always just moments away from land, *Delta Queen* was considered exempt from some clauses of the law until 1968 when the Safety at Sea Law of 1966 forbade the operation of vessels with wooden super-structures. The U.S. Coast Guard, which had taken over the duties of the Steamboat Inspection Service in 1946, informed the owners of *Delta Queen* that they would not be permitted to operate in overnight service after 1970. The owners sought an exemption and ultimately obtained it in the form of an Act of Congress in 1970.

The Congressional exemption was good for only three years and has been renewed several times since. The owners of *Delta Queen* have complied with all safety requirements short of the total rebuilding required to replace all wood with steel. Such rebuilding would destroy the vessel's historic character. The owners must reapply for a further Congressional exemption in 1991.

A minor controversy arose when President Jimmy Carter and his family were passengers on *Delta Queen* in 1972. Several papers ran stories that the President was endangered by traveling aboard a "firetrap." This sensational reporting did bring some unsympathetic attention to the problem, but brought no answers.

Attention was most recently drawn to the problems of historic vessel operation at the 1988 National Trust for Historic Preservation meeting in Cincinnati. Participants in the panel discussion, "Historical Authenticity vs. Safety of Historic Steamboats," expressed concern over a number of issues related to safety on old vessels.

The panel suggested possible answers to these problems such as adapting historic building preservation practices to vessels. Land historic preservationists have found answers to a variety of problems concerned with public safety in historic structures in that most building codes include some degree of latitude in interpretations of safety regulations when applied to historic buildings.

The U.S. Department of Housing and Urban Development published the *Rehabilitation Guidelines No. 8; Guideline on Fire Ratings of Archaic Materials and Assemblies* in 1982 to help preserve historic buildings while assuring standards for health and safety. Helpful ideas for fire safety are included in National Fire Protection Association documents "No. 911: Protection of Museums and Museum Collections," "No. 913: Protection of Historic Structures and Sites," and "No. 914: Rehabilitation and Adaptive Reuse of Historic Structures" (in draft). The International Council of Building Officials has written the *Uniform Code for Building Conservation* which also may be of use in formulating safety requirements for historic vessels carrying passengers.

Innovative answers to safety problems aboard operating historic vessels are needed. A separate vessel classification system for historic vessels, like that for sail training vessels, is being urged by some operators. A separate historic vessel classification would set up a safety standard for historic vessels that could allow traditional wood construction. Answers have been elusive but may be found by combining land building codes with maritime practice and good sense. An Act of Congress should not be needed to sail or steam a historic ship.

Kevin J. Foster is a maritime historian with the National Maritime Initiative.

The Role of Archives in the Preservation of Maritime History

Stephen A. Haller

The lofty spars of a square-rigger silhouetted against a San Francisco fog; the blinking beacon of a lighthouse perched on a headland at the entrance to the bay; or the graceful bulk of a huge wooden passenger ferry swaying against a pier: for even the most casual observer, these are tangible links to our seagoing past. In the preservation of our nation's maritime heritage, such highly visible objects afloat or ashore command immediate attention.

Less apparent are the collections of artifacts, documents, photographs, vessel plans, and corporate records that are the first-hand output of ship masters, ship owners, marine architects, and scholars. Yet, the information resources contained therein are the very cornerstone upon which our knowledge of maritime history is based. Maintaining these resources is an essential part of our maritime heritage. The benefits of doing so create a ripple effect, since the information provided therein has specific application in a wide variety of maritime preservation projects.

The San Francisco Maritime National Historical Park (SFMNHP) is the National Park Service's museum of west coast maritime history. The museum's Historic Documents Department manages one of the three largest collections of archival material in the Service. Consisting of 250,000 photographs, 120,000 vessel plans, and 1,200 shelf-feet of manuscripts and archival material, its scope reflects that of the museum itself: "the maritime history, technology, and humanities of the Pacific Coast (including western rivers) with emphasis on San Francisco Bay and its rich maritime heritage." The Historic Documents Department was established in 1983, in recognition of the fact that a zealous collecting policy, combined with staffing limitations and a consistently low priority assigned to management of historic documents, had left a monumental backlog of valuable but unusable material in dire need of preservation and cataloging. Respected consultants prepared a historic document survey and a conservation report, out of which grew a distinct program for the storage, conservation, cataloging, and preparation for reference use of these one-of-a-kind materials.

In the five years since, over 1,000 linear feet of manuscripts and business records have been given proper storage, appropriate arrangement, and basic access through computer-generated indexes, and inclusion at the collection level in the Service's Automated National Catalog System. Included in this total are more than 2,000 logbooks. Over 100 discrete collections of personal papers and business records are now available for public reference use. All of the museum's major collections of nitrate negatives on hand as of 1987 have been duplicated onto safety film, and have been given full processing and access. In several cases, large photograph collections of steamship companies or shipyards that had been broken up and filed under an artificial classification scheme were laboriously recombined in accordance with professional archival principles. They are now accessible as the compilers used them, with all the rich interrelationships intact. A five-year plan is now in place that addresses future preservation and cataloging goals in a logical fashion. The service-wide thrust to decrease the backlog in cataloging of museum collections has been given full attention here.

The application of this vast and fascinating bulk of material in the historic preservation effort is wide-ranging and diverse. From the support of underwater archeology to the illustration of scholarly and popular publications, from the adaptive use

of historic structures to the recreation of construction techniques on historic vessels—the need for primary information and the demands on the collection are continuous.

Growing public awareness of the significance and value of submerged cultural resources had led to increased pressure and threats to the resource. Managers from the Channel Islands National Park, the Golden Gate National Recreation Area, and the Gulf of the Farallones National Marine Sanctuary expressed the need for data on the location, significance, and special features of the submerged cultural resources in their areas. The NPS authorized the preparation of shipwreck assessments following the format of Historic Resource Studies. The first of the assessments, a joint effort sponsored by Golden Gate National Recreation Area and the Gulf of the Farallones National Marine Sanctuary was just published, while a Channel Islands study concentrating on the shipwrecks of San Miguel and Santa Rosa Islands is available in draft form. The historic documents collections of the SFMNHP proved to be the major source of information for these reports.

High on the list of valuable source material are the collections of the Marine Exchange of San Francisco. This clearing house for vessel movements has deposited records dating back to the 1870s with the Museum. Of particular interest are the index cards kept by the Marine Exchange—seventy-two file drawers of 6"x8" cards filed by vessel name that record the comings and goings of all craft into San Francisco Bay from 1902 through 1960. Considerable information about their movements to other ports of the world between their San Francisco appearances make these cards a prime source for the reconstruction of a vessel's career. Of equal interest—but generally restricted for conservation reasons—are three fragile volumes of disaster summaries, containing handwritten accounts of shipwrecks, groundings, dismantlings, collisions, and all sorts of accidents that befell the vessels that had at some time passed through the Golden Gate.

The museum's collection is particularly rich in vessel specifications, notable among them the wooden ships of Hall Brothers of Washington State, the long and varied life's work of the shipbuilding Dickie family, and the iron and steel vessels produced by Moore & Scott of Oakland (California). Specific data about type of wood, dimensions of timbers, method of rigging, and kinds of fittings contained in the shipbuilder's specifications combined with core samples or measurements taken on site often make possible a positive identification of a shipwreck site. The juxtaposed remains of the schooner *Reporter* and the clipper *King Philip* on San Francisco's Ocean Beach, and the schooners *J.M. Coleman* and *Watson A. West* at San Miguel Island, California, are examples. The *Reporter* and *West* were rigged with deadeyes and wire backstays, while *Coleman* and *King Philip* had the older hardwood deadeyes and hemp.

Measured drawings and vessel plans have provided a great deal of information for historic ship preservation projects, and in themselves loom as one of the greatest archival preservation challenges faced by this institution. Inherently valuable in their own right as works of art on paper, they are clumsy to handle, yet fragile. They eat up an extraordinary amount of space when properly stored; they are vulnerable to agents of deterioration such as light, mold, and pests; and they provide a veritable alphabet soup of residual chemicals, linen supports, starch sizing, and media to consider when processing. For these daunting reasons only about 10% of the 120,000 vessel plans have received full processing and needed treatment to date. Nevertheless, the information potential is so tremendous that these collections, processed or unprocessed, are constantly in use by clients as diverse as model-makers, historians boat owners, and public agencies. A large format Xerox copier allows us to make reference copies for research use, as well as acid-free preservation copies in order to retire fragile originals or to save in permanent carbon on bond the fugitive information on diazos or blueprints.

Certain of the museum's individual collections are of particular value, and consist of a full range of document types, including plans, photographs, and manuscript material. A good example is the David W. Dickie collection—records of a shipbuilding family that conjure up the glorious early days of sail and steam and reflect the changes to shipping and maritime technology on the Pacific Coast from 1882 to 1957. Containing approximately

5,200 vessel plans ranging from sailing schooners, steam schooners, and ferryboats to tuna clippers, this is the "flagship" of our collections and the yardstick against which we measure all future work.

The single largest individual collection of vessel plans and photographs is that of the Bethlehem Shipbuilding Corporation—whose corporate lineage dates back as far as 1849 when Peter and James Donahue founded the Union Iron Works. Union Iron Works was the first iron foundry on the West Coast of the United States. They were central in the development of the mining industry in the west, supplying California and Comstock lode mines with hardrock mining machinery and hydraulic engines. Upon the Donahues' deaths, the notable shipbuilding Scott family took over and focused the yard's endeavors in that field. Early significant vessels built there include the ferries *Berkeley* and *Tamalpais*, the monitors *Monterey* and *Wyoming*, the battleship *Oregon*, and the cruisers *Milwaukee* and *Olympia*. Mass production in two world wars sent submarines, destroyers, destroyer escorts, and anti-aircraft cruisers down the ways in large numbers, but the general decline in the shipbuilding industry in the post-war era led eventually to the firm's consolidation and the donation of this massive bulk of material to the maritime museum over a period of several years. The collection consists of approximately 75,000 plans dating from 1852-1961, rolled tightly into 2,500 tubes; 22,000 photographs ranging from 1889 to the 1970s; and ledgers, order books, specifications, and personnel records dating largely from the period 1880-1910.

Pending conservation and cataloging, the policy regarding use of the Bethlehem plans restricts them to projects that can demonstrably support specific and tangible aspects of preservation. There has been no shortage of use.

The Colusa County (California) Fairgrounds sought out the collection as the source of complete plans for a Corliss stationary steam engine, once owned by Pacific Gas & Electric Company, and now on display at the fairgrounds. The documents supplied will enable their restoration team to fabricate replacement parts to original specifications and rehabilitate the machinery to running condition.

The ferry *Klamath* is owned by a private design firm and graces the San Francisco waterfront outwardly unchanged, in spite of a complete overhaul of the interior for use as office and reception space. The owners were supplied with blocking diagrams from the collection. These aided substantially in the process of dry-docking, while a subsequent asbestos-removal project was completed in a safe and timely fashion with the aid of piping diagrams from the Bethlehem collection.

The ferry *Berkeley*, built in 1898 at Union Iron Works, was severely damaged in a fierce storm in January 1988; the wave action actually lifting her starboard sponson onto San Diego's Embarcadero, where the rub rail was carried away and the sponson braces were bent. Twenty-four plans for her triple-expansion engine and seven hull and superstructure plans were located in the collection, and reproductions were speedily forwarded to the San Diego Maritime Museum, where they were put to work in the replacement and repair of lost and damaged portions of the vessel. Our sister museum's magazine later effused, "The help of the National Maritime Museum is in the same positive vein of the Southern Pacific (ferryboat company) when the company and others volunteered the services of their crews and ferryboats to transport earthquake survivors away from a burning downtown in 1906." It's nice to be appreciated.

We now have organized and preserved in one easily accessible location at Hyde Street Pier all known existing plans of the historic vessels of the Park Service fleet. These collections are a combination of historic drawings and copies received as isolated items from a variety of sources and brought together by the museum staff in years past because of common subject matter; and newly-created records produced during the course of restoration, repair, or reconstruction projects on the vessels while they were museum ships. Most notable among them are the series of vessel plans associated with the Historic Structures Report prepared for the steam schooner *Wapama*, and the exquisite measured drawings executed by HABS/HAER on the ship *Balclutha* as part of an NPS-administered

project to refine the guidelines for recording historic ships. Such material, properly stored and conveniently accessible, becomes an immeasurably valuable addition to the data available to the preservationist, and is expected to be useful in the compilation of a future series of Historic Structure Reports for each vessel in the fleet.

As a source of primary information for the restoration and preservation of the museum's own fleet of historic vessels, original documents at the San Francisco Maritime NHP have proven invaluable. The shipwright foreman can spend a few hours examining sketches of scow schooners made in the 1930s, and is able to come away with a range of examples of joiner work, deck fittings, and construction details from craft that have long ago disappeared. Upon his return to the museum's working scow, *Alma*, the foreman will incorporate such information into the repairwork to her cabin.

Plans of Balao-class submarines provide the manager of the USS *Pampanito* with measurements, specifications, and details crucial to the management, restoration, and maintenance of the historic World War II submarine—considered the finest example of its type of historic restoration project in the Nation.

Information such as this also has an obvious application in interpretation and exhibition. Photographs from the collection are a mainstay of the exhibition program of the maritime museum. A particularly successful exhibit entitled "The Marine Photographs of Wilhelm Hester" has now traveled on display to the Seattle Museum of History and Industry. A selection of hull lines from the collection was used by the museum's Small Craft Department as the basis for the development of a very successful series of half-hull model building classes.

The Bethlehem photograph collection alone has proved a rich source of material for exhibitions, publications, and research. Images from the collection have provided support for several nominations or assessments of eligibility for the National Register of Historic Places. The dry-docks at Hunters Point Naval Shipyard and a Bethlehem-built dry-dock caisson, used as a bulkhead for landfill in the city of Sausalito, are examples.

With the establishment of a successful track record in the preservation of historic photograph collections came requests for the use of our expertise by other facilities. The most significant such relationship established to date is with the USS *Arizona* Memorial NHS. The National Park Service acquired a collection of 16,000 photographs from the National Archives detailing the Pearl Harbor Naval Shipyard. They date from 1909, when construction of the yard began, and follow its development through the early years of World War II. Although the National Archives felt that the material did not warrant the effort needed to preserve the nitrate film and make the information accessible to the public, from the specialized perspective of the *Arizona* Memorial it was an unknown treasure waiting to be discovered. We have entered into a cooperative arrangement with the Memorial, whereby they provide the funding and we supply the lab facility and the technical expertise to duplicate the nitrates onto stable film base, identify and catalog the material, and store it properly in archival envelopes and boxes. When the two-year project is completed, the collection will become a major new resource on the history of Pearl Harbor, supplying the *Arizona* Memorial and the U.S. Navy with information on the history of the physical plant at Pearl Harbor, the nature of its use over the years, changes that took place, and the kind of activities, vessels, and personnel associated with the facility.

The museum's in-house photo lab has succeeded to such an extent in the duplication of historic photographs for preservation that we are being used as a source for expertise and services by other NPS facilities facing the daunting challenge of preserving nitrate negatives in their photo collections. To date, Mesa Verde, Great Sand Dunes, Point Reyes, and Yosemite have taken advantage of the services or advice we can provide in this and other archival matters.

Plans of the historic vessels at Hyde Street comprise only one portion of the institutional records of the museum that date back to its inception as the San Francisco Maritime Museum in 1951. Files of the preservation departments under such headings as

purchase orders, maintenance schedules, rigging information, and dry-dock contracts are particularly useful in preserving an institutional memory long after individuals have departed and in reconstructing the sources of materials, the kinds of paint, or the last time a portion of the vessel was inspected, etc. It is in this fashion that the Historic Documents Department is able to provide supporting data for the decisions of those working to preserve the tangible floating or underwater vestiges of our maritime heritage.

There is also a first-hand role for the archivist to play. The illustrated diary of a seasick and disillusioned gold seeker kept one hundred thirty years ago while rounding Cape Horn; the carefully annotated photo scrapbooks of a talented amateur photographer who loved the San Francisco waterfront and its people; the professional photographic record of the output of a wartime shipyard; the handwritten notes of seminal maritime historians; the laboriously executed ink-on-linen profile of tugboats long gone: these, just as much as historic ships or lighthouses, are also tangible aspects of our Nation's seagoing roots. They are worthy of preservation as museum objects and artifacts in their own right, not only for the information they contain. By preserving and organizing this material so that it is available for public use for generations to come, the archivist works alongside the marine carpenter, the deckhand, and the archeologist in the preservation of our Nation's rich maritime heritage and the fulfillment of the mission of the National Park Service.

Stephen Haller is the Curator of Historic Documents at San Francisco Maritime National Historical Park and a historian specializing in maritime history and WWII.

Nondestructive Documentation

of Shipwrecks

Daniel J. Lenihan

Given its special conservation mandate, the National Park Service has refined techniques for conducting nondestructive research on archeological sites. The archeological community at large has developed a strong trend toward "conservation archeology" as a philosophical approach, but—because of a larger diversity of people and practice—it is not as comprehensive an ethic as exists in the Service.

In the specialized discipline of underwater archeology there is a particularly striking difference. Most institutions involved in shipwreck archeology have a heavy emphasis on excavation and the recovery of artifacts as the only ways to obtain information from the seabed. The problem is that even good excavations destroy sites and incur obligations for curation and indefinite storage of artifacts. In return for the information, the institution or government agency is then left with an albatross around its neck for all time. Some artifacts are useful for display and interpretation, and retention of all artifacts is necessary to maximize future research use of any given collection, but how many need really have been collected in the first place?

The Service's Submerged Cultural Resources Unit (SCRU) collected two artifacts over a period of six years of research on shipwrecks at Isle Royale National Park, and one was returned to the bottom after analysis. Another artifact, a prehistoric pot, worthy of museum preservation was retained for that purpose. From Isle Royale research, a 600-page report was generated on the park's submerged cultural resources. This approach to site documentation, though commonplace in a National Park Service framework, is extremely rare in the rest of the discipline and has attracted considerable attention from other agencies and from other nations.

Of some additional interest is the reaction from different groups when they learn the methodology NPS uses for production of site maps and shipwreck drawings that have won awards for historical graphic presentation. Expecting extremely sophisticated instruments and complicated computer software, representatives of the United States Navy and various maritime research entities seeking to learn our techniques have been horrified on seeing the SCRU tool kit. A box of "instruments" used in a typical mapping project performed by the unit would contain several boxes of mechanical pencils, a thousand feet of string, clothespins, measuring tapes, a cheap hand compass, drugstore protractor, flagging tape, and some candy bars. Of course, it doesn't hurt to have experienced scientific illustrators pushing those mechanical pencils, but in the final analysis, it is the strategy that is unique and quintessentially National Park Service. The ingredients are people who are generalists, know the environment, and have a lot of street savvy for doing successful cultural resources research underwater.

The 200 National Park Service rangers and maintenance personnel, who have diving as a collateral duty, have contributed greatly to final SCRU products, and the demystified techniques employed by the Unit are easily mastered by these folks. On *USS Arizona*, for example, in addition to excellent help from Navy divers, Memorial staff alone conducted hundreds of dives in which the networks of string baselines, and transient triangles formed by measuring tapes resulting in a fine drawing of the largest structure ever mapped underwater. Park staff assisted in similar operations at Apostle Islands, Pictured Rocks National Lakeshore, Biscayne National Park, Channel Islands National Park, and Cape Cod National Seashore. War in the Pacific National Historic Park maintains a team specifically for documenting submerged cultural resources in the park.

The video camera has been another extremely valuable feature. It permits the camera operator to see on the bottom through a three-inch color monitor exactly what has been captured on tape. Later the tape is used to augment drawings and field notes. It is then available for use by the parks for purposes of interpretation.

Some of the more sophisticated technologies are also becoming increasingly practical for nondestructive documentation. Remote operated vehicles are now available that permit investigation of archeological sites at depths well beyond those accessible to divers. These miniature vehicles are comparatively inexpensive and of a size easier to use than they were even five years ago. In June 1988, the production staff at Glen Canyon NRA successfully recovered a drowning victim after the body was located by one of these self-propelled cameras.

Also new in the bag of technological tricks is the SHARPS (sonic highly accurate range positioning system). A scuba diver using wireless communications to the surface can carry a transducer in his hand as he traces over the remains of a historic shipwreck. The transducer, serving the role of a "mouse" in the jargon of computers, transmits its location in three dimensional XYZ coordinates back to a surface monitor with an accuracy measured in centimeters. Though still in need of refinement in application, the eventual benefits from this tool will be enormous.

All underwater archeological research, of course, cannot be nondestructive. Research on some sites, even in park settings, requires excavation through bottom sediments just to contact and evaluate the nature and significance of the resources. There are also times that major excavations may be justified—for example, in a true rescue situation, when a site is facing certain destruction.

This is actually a much more rare situation than one might imagine. Treasure salvors often make arguments for salvaging wrecks that are in "imminent peril" and offer the agency of jurisdiction a share in the profits of the "research" they conduct to mitigate the problem. Although this sort of activity is prohibited in the National Park System, the self-serving nature of the claims of imminent peril often seem to elude state land management agencies.

Whether research is nondestructive or minimally destructive, the basic principle should be the same: do the least damage to the resource base with an archeological process while answering the most questions about the past. The best way for park managers to ensure that this occurs is to require research designs that definitively explain the values to be derived from disturbance activities and that closely comply with NPS-28, an eminently sound set of cultural resource guidelines. One flaw in the guidelines that is out of keeping with the rest of the document bears on our present discussion. The use of "data recovery studies" is a term that somehow implies that there is a direct correlation between recovery of materials and recovery of data. Hopefully, that will change the next time the document is rewritten, particularly since it will be done by NPS, an agency which has clearly defined its responsibilities for archeological research.

Daniel J. Lenihan is Chief of the Submerged Cultural Resource Unit, Southwest Regional Office, National Park Service.

Seguin Project: Background on Documentation

John S. Carter

Built in 1884, the steam tugboat *Seguin* had a long and productive service along the Maine Coast. When maintenance problems and old age caused its last working owner to retire the vessel from service, it was given to the Maine Maritime Museum, Bath, Maine, then a fledgling institution operating as a museum for barely five years.

In retrospect, the Museum's acceptance of the vessel was ill-advised because it did not have either the facilities, manpower, or money necessary for the total rebuilding required to restore *Seguin*. The museum did not conduct a marine survey of the vessel when it was donated, and therefore did not realize the magnitude of rot and deterioration that was present within the vessel's timbers making anything short of total rebuilding unfeasible. The vessel's true condition was concealed because, while the hull was in poor shape, the machinery was still operational, and the boiler, while uninspected and unsafe, could still produce steam.

The *Seguin* was berthed at a variety of places along the Bath Waterfront and in Boothbay Harbor while an effort was organized to build a shipway to haul the hull for eventual rebuilding. A group of dedicated volunteers worked to achieve the building of the ways, and in 1977 the remains of the hull, less the deckhouses, boiler, engine, and machinery, was hauled at the Museum's Percy and Small Shipyard.

The volunteers and some paid staff, hired through the auspices of a Maine Historic Preservation Commission grant, began in earnest to rebuild sections of the hull with a goal of a 1 to 1.5 million dollar restoration effort that would take place over five years. Still no competent American Bureau of Ships marine surveyor had surveyed the hull.

Maritime preservation of vessels in the U.S. was still in its infancy during the 1970s. Only one significant maritime museum in the country had a full-scale maritime preservation effort for large vessels in operation: Mystic Seaport in Connecticut. Other institutions attempted some large scale preservation projects, but with uncertainty and a lack of expertise. It was recognized that major efforts of this type required immense amounts of money and were much more expensive than complete replication.

Maine Maritime Museum made several mistakes in its attempts to restore *Seguin*:

1. As with many of these types of projects, the people involved were so wrapped up in the process, they did not objectively assess the effort's potential in its entirety, i.e., the feasibility, the funding, and the expertise necessary to complete the project.
2. Proper survey and documentation of existing material was bypassed in an effort to proceed to "hands-on" restoration.
3. Large portions of the hull, deckhouses, and machinery areas were torn off and lost in an effort to take the vessel apart during the course of a misguided restoration effort.
4. A realistic plan of restoration and/or a long range projecting on how to proceed with a total restoration of the vessel and, importantly, how it would be funded, was never developed.
5. The Museum did not project the impact that a restoration effort of this magnitude would have on other critical areas of museum operations.

Then I was hired as the director of the Museum. My background included work at Mystic Seaport's H. B. Dupont Preservation Shipyard, as well as shipwright work on building and rebuilding several large wooden sailing vessels such as *Clearwater John F. Leavitt*, *Mary Day*, and *Richard Robbins Sr.* In addition, I had served on restoration/marine preservation panels for the National Trust for Historic Preservation, the National Endowment for the Humanities, and the Society of Naval Architects and Marine Engineers. I drafted a major documentation report on the preservation effort for the 1841

whaleship *Charles W. Morgan*, and assisted in drafting an interpretation program for the historic replica vessel *Mayflower II*.

As a result of this background, I was able to bring a new perspective based on professional restoration and documentation skills to the *Seguin* project. The *Seguin* restoration, counting grants, in-kind donations, and volunteer work, had totaled \$440,000. It was stopped and put on hold until a time when it could be objectively reevaluated in light of realistic preservation objectives.

The Museum went ahead with a variety of other projects aimed at interpreting maritime history to the public, taking care of a series of serious maintenance issues which had developed, and most importantly drafting a workable five-year plan for the Museum.

It was not until that plan was put into motion that the issue of *Seguin* was again addressed. It determined that the Museum needed the counsel of a group of professional maritime preservationists in order to assist the Museum in formulating an objective opinion of the future possibilities for the project. At the request of the Chairman of the Board, John D. Chapman, I submitted the names of a group of maritime preservation leaders with demonstrated preservation expertise, as well as successful projects they had completed. The distinction was made between avowed "shipsavers," or those who have perhaps rescued hulks from the scrapyards only to let them deteriorate in museum wharves, and professional maritime preservationists who have perpetuated and funded major vessel projects.

In May 1987 a panel of maritime preservation experts convened at Maine Maritime Museum for the purpose of examining the remains of the steam towboat *Seguin* and making recommendations on what to do with the remains. The group included Michael Naab who drafted standards and guidelines for historic vessel preservation projects as part of the National Maritime Initiative, and Don Birkholz, a marine surveyor who has done extensive surveys for a number of historic ships throughout the United States.

The panel met all day with the primary objective of examining early restoration efforts, the present fabric left relating to the hull, and the early documentation material generated by the Museum until work stopped on the project in 1982. The panel was to reach a consensus opinion which would be placed as a recommendation before the Museum's Board of Trustees.

During the course of examination, it was discovered that the existing relic or remaining portions of the hull were so badly deteriorated that in essence, nothing of the original vessel fabric could be saved for a restoration or rebuilding. In addition, through careful examination of the documentation done while work was carried out at the Museum, it was revealed that the measured drawings and hull lines were sadly lacking both from a draftsmanship and accuracy standpoint.

Accordingly, the panel concluded that the remaining hull parts were not worth keeping in storage, and it was recommended that only the stern deadwood, the lower stem and forefoot, and a representative section from the mid-hull area be kept for future display and explanation. Further, the panel recommended that the Museum document the remains to the Historic American Engineering Record (HAER) standards as adopted by the National Park Service and that all mechanical fixtures such as the steam engine and steam pumps be saved for future exhibition purposes.

Those recommendations were accepted by the Board of Trustees, and \$25,000 was appropriated for documentation of existing vessel parts to HAER standards and to move and store salvageable pieces of the hull. The documentation, including record photography, was carried out from November 1987 through January 1988. The hull pieces earmarked for saving were kept for future exhibit purposes; in early March 1988 the remaining portions of the hull were scrapped. The dismantling was carefully photo documented, and measured drawings of the vessel are now being completed. When the proper documentation is complete, the Museum will be in a position to replicate the hull at some point in the future, should funding become available.

John S. Carter, Director of the Maine Maritime Museum, recently accepted the position of Director of the Philadelphia Maritime Museum.

Human Remains and Shipwreck Sites:

A Management Issue in the National Parks

Toni Carrell

The date December 7, 1941, is etched into our national consciousness. It is, of course, the date that Pearl Harbor was attacked and more than 1,100 men were lost on the battleship *Arizona*, 400 were trapped in *Oklahoma*, and many more lives were lost on *Utah*, *California*, *West Virginia*, *Nevada*, *Maryland*, *Tennessee*, and *Pennsylvania*. Following immediate efforts to rescue survivors and re-float or salvage the ships, efforts at retrieval of the bodies of the lost sailors in the heavily-damaged *USS Arizona* and *USS Utah* were abandoned. Although not a National Memorial at the time, the significance of the loss of these lives was quickly realized and the hulks of *USS Arizona* and *USS Utah* were eventually designated as war memorials. Even before that designation, however, these sites were protected from relic-hunting and disturbance of the human remains they contained. The *USS Arizona* Memorial, now jointly administered by the US Navy and the National Park Service (NPS), is just one shipwreck containing human remains for which NPS managers have responsibility.

The circumstances surrounding another wreck, however, and the disposition of those remains is far different. The 525-foot Canadian bulk freighter *Emperor* ran aground on a submerged reef, locally referred to as Canoe Rocks, on the northeastern end of Isle Royale on June 4, 1947. The large vessel quickly began to sink and the order was given to abandon ship. In the rush that followed, 12 of the crew drowned when the ship began to break up. Eventually, two of the 12 bodies were recovered; the others were never found.

At the time of *Emperor's* loss, Isle Royale was a fledgling national park established only seven years earlier. Little attention was paid to the shipwrecks from a cultural resources standpoint; managers had their hands full just trying to get the young park running smoothly. The ships were simply there. With the advent of sport diving in the late 1950s and its steady increase throughout the 1960s and 1970s, park managers realized these ships were significant cultural resources in need of appropriate management. They steadily took steps to monitor the activities of divers and reduce artifact collecting on the more than ten major ships ringing the island. While managers were taking a positive attitude toward these resources and protecting them from collecting, they were not prepared for the discovery of human remains deep within *Emperor* by sport divers in September 1975.

According to the divers who discovered the drowned crewman, the body was clothed and in remarkably good condition after 28 years of immersion. Located deep within the ship—the engine room—and at a depth of 150 feet, the crewman's remains had never been discovered because of the difficulty in reaching that area of the ship. Sport divers made an effort to retrieve the body, but were unsuccessful because of the depth and intricate maneuvering it would have required to work through the debris in the wreck. Park officials decided, shortly after the discovery in September, that because of the extreme depth, cold, difficulty, and danger to the divers involved, no further attempts would be made to recover the remains. Later that year, in response to rumors that the body of the crewman was being disturbed by divers, another unsuccessful effort was made by the park and a regional dive club to retrieve the remains. Arrangements had been made to issue a death certificate and transfer the crewman to Canadian officials for identification and notification of the next of kin. When this second attempt failed, a Thunder Bay, Ontario, dive club removed the remains and deposited them in deep water.

Although the crisis surrounding the human remains found in *Emperor* has passed, the issues raised by this situation are by no means resolved. There are other deep wrecks in the

National Park System in which there are known human remains—again within Isle Royale National Park. In the case of *USS Arizona*, the protocol was clear once the decision was reached to leave the sailors interred in the hull, even though it was not officially designated as a war memorial until 1962. In 1975, however, when the managers at Isle Royale were faced with a highly sensitive situation, there were no clear guidelines or a mutually agreed upon protocol available for shipwreck sites that were not memorials or for handling the remains of non-US nationals. All the park managers could do was use their best judgment under the conditions that existed at that time.

In response to the need for more guidance in dealing with historic and archeological human remains, in 1985 the National Park Service issued a technical supplement to *NPS-28*, the Cultural Resources Management Guidelines. That supplement clearly states that "non-disturbance of human remains is generally preferable to removal, [although] this is not always feasible. In cases where it is not, the removal of the remains often involves especially sensitive issues in which scientific and cultural, including religious, values must be considered and reconciled." This guideline goes on to direct that the Service shall make "every reasonable effort... to identify and locate individuals or groups who have a kinship or cultural affiliation with the interred... [and make every reasonable effort] to identify, locate and notify recognized leaders, officials, or spokespersons for these groups."

The guidelines still fall short, however, of addressing the sensitive issue of dealing with human remains that are interred in a shipwreck site where sport diving occurs or has the potential to occur. Should the site be closed to diving until arrangements can be made to recover the individuals? If the ship is in deep or cold water and the remains are difficult to reach, should they be left in place in the hope that inaccessibility will continue to protect them? Should park managers appeal to the decency of the sport diving public and request that these remains are undisturbed? Should Service or other professional divers risk their lives trying to "seal off" access to the areas where the remains are located? When the remains are those of non-U.S. nationals, what guarantees should be made, or are possible to make, to governments to insure that those remains are being dealt with in an appropriate manner? This issue is being faced by present-day managers at Isle Royale regarding another shipwreck, *Kamloops*.

The Service has many hundreds of historically documented vessel losses within its boundaries. These ships span a time period from the earliest exploration of the New World through World War II, and include vessels under both the U.S. flag and the flags of other nations. Where loss of life occurred, there is the potential for the presence of human remains. Until basic on-site management and policy decisions are made to adequately address the various issues associated with human remains on shipwrecks, we will be forced to make judgments without the benefit of a thoroughly thought-out and carefully considered plan of action within which to work.

Toni Carrell is an archeologist with the Submerged Cultural Resource Unit, Southwest Regional Office, National Park Service.

Steamship *Wapama* Finds a Cure: Remedial

Treatment of Dry Rot in a Large Wooden Structure

Don Birkholz, Jr.

Curious things are afoot on the National Park Service historic ship *Wapama* these days. Three times each day, an intricate system of tubes and valves sprays an aqueous solution on the vessel's interior until it gushes forth from the open seams of her wooden hull. The active ingredient in the solution is sodium borate, and it is being applied in an attempt to cure *Wapama's* most serious ongoing problem—dry rot decay.

Built in 1915, *Wapama* has led a charmed life. It might not seem so to see her today, high and dry on a barge in Sausalito, California. Considering the hazards of her original trade of carrying passengers and lumber out of unprotected "doghole" ports on the northern reaches of the rugged West Coast, *Wapama* could easily have ended her days on the rocks of a fog-shrouded shore, or, having outlived her commercial usefulness, rotted away in a forgotten backwater. Yet she steered clear of these fates to become the last survivor of some 225 "steam schooners," a unique type of vessel built and operated on the West Coast between the 1880s and 1920s. She is now a National Historic Landmark.

Ironically, the major problem *Wapama* faces today is the result of her longevity; she has outlived the practical life span of the material she is built of—Douglas fir. If protected from the ravages of the elements and biological deterioration, Douglas fir may well last indefinitely, but when used in structures such as *Wapama*, where exposure is constant and protection is difficult, it tends to follow a natural cycle of deterioration, much as a fallen tree in the forest returns to the soil. Douglas fir was considered an excellent shipbuilding material in *Wapama's* day, it was available in long straight lengths, it was strong, and it was abundant. Unfortunately, Douglas fir is also the food of choice for numerous species of fungi collectively known as "dry rot."

Wapama was already riddled with dry rot decay by the time she came under NPS management in 1974. By 1979, *Wapama* had become so weakened by the advancing decay that she was in danger of sinking. She was subsequently removed from the water and placed on the steel barge where she rests today.

In 1985, Tri-Coastal Marine—a firm specializing in maritime preservation—was contracted to produce a Historic Structure Report for *Wapama*. Its recommendation was to preserve *Wapama in situ* on the barge, a treatment which would not preclude an eventual rebuilding of the vessel for refloating. In order to achieve the goal of preservation, dry rot would have to be arrested. In its search for remedies, Tri-Coastal Marine contacted wood preservation specialists Dr. William Dost and Dr. Wayne Wilcox of the Forest Products Laboratory at the University of California at Berkeley. Dost and Wilcox were fascinated by *Wapama* and agreed to host a workshop to brainstorm possible cures for her dry rot problem. It was concluded that drying of *Wapama's* timbers was the best long-term solution for arresting and preventing decay. This could be achieved by placing a weatherproof cover over the vessel. But the problem was not so simple; because her timbers are so massive, it would take years for some of them to dry to the point where decay would cease. As a result, dry rot would continue to be active for several years. In order to prevent further loss of historic fabric, a more immediate solution would be needed. The logical answer was chemical preservatives, but again there were difficulties. Foremost

among them was the fact that most of the effective anti-fungal wood preservatives are also hazardous to humans. If *Wapama* was treated with such chemicals, she might be preserved, but she would have the public accessibility of a toxic waste dump. Another problem is that Douglas fir, being a "soft" or "closed pore" wood is difficult to penetrate with most commonly used preservatives, and penetrability is further reduced when the wood is wet, as most of the affected timbers are.

Following a recommendation from the workshop, U.S. Borax Company was contacted concerning their product TIMBOR, a water soluble wood preservative. Comprised mostly of sodium borate, TIMBOR is not toxic to humans. Being water soluble, it penetrates by diffusion, a process which is actually enhanced by wetness in wood. Tests have shown complete penetration of 12-inch diameter Douglas fir logs which have been briefly immersed in a solution of TIMBOR. Although sodium borate has been used in this country for a number of years for treatment of new lumber, its use for remedial treatment of decay fungi has been limited. Sodium borate has found more favor in Europe, where governments have been quicker to outlaw the more toxic preservatives.

Upon hearing of *Wapama's* dilemma, U.S. Borax research chemist Dr. Robert Bianchini was eager to get involved. To Dr. Bianchini, *Wapama's* massive wooden structure presented an ideal test site for remedial treatment with TIMBOR. There was no question that once in the wood, TIMBOR would arrest decay. The question was how to get it there? TIMBOR is usually applied by briefly immersing single pieces of lumber in a vat of heated solution. Since immersion would not be possible with *Wapama*, an alternate method would be needed. Dr. Bianchini and U.S. Borax representative Brian Hamil calculated that comparable penetration could be achieved by intermittently wetting the surface of timbers to the saturation point. This process would have to be carried out at regular intervals over an extended period and would require equal wetting of all accessible surfaces. Manual application would therefore be impractical.

Working with *Wapama's* shipkeeper, Michael Harrington, Bianchini and Hamil developed a semi-automated delivery system that includes a 1500-gallon mixing tank, 1500-gallon holding tank, a dozen automatic valves, an electric pump, and over 3000 feet of pipe. The system was installed by Harrington and crew and in May 1988 the treatment process began. Initial results after six months of treatment are encouraging. Chemical analysis shows that sufficient concentrations of TIMBOR have penetrated up to two inches into timbers. Extensive sampling and analysis will be performed at the nine-month interval and more definitive results are expected.

To date, the consensus of those involved is that the process is working. No significant adverse effects of the treatment have been seen, nor are they anticipated. The remaining question is, how long will it take? Interpolating from the initial results of two inches in six months, *Wapama's* largest timbers, some measuring up to 18 inches square, may take over two years to treat. Thankfully U.S. Borax is patient.

If the treatment is successful, *Wapama* will get a new lease on life, and a "kinder, gentler" method of remedial treatment of dry rot will have been proven in a difficult case.

Of perhaps greater significance are the potential uses of TIMBOR in *preventing* decay in historic wooden ships. Routinely applying the product on decks and in bilges may well prevent the type of malady *Wapama is* experiencing without the detriment to human health and environment that we have come to expect from wood preservatives.

Don Birkholz is a marine surveyor and a principal in the firm Tri-Coastal Marine, Inc.

Bicentennial Lighthouse Fund

Carol A. Minick

In FY 1988, Congress authorized \$1 million to establish a "Bicentennial Lighthouse Fund" in commemoration of the 1789 Lighthouse Act. The appropriations act provided that the funds be allocated in the same manner and under the same operating requirements as regular Historic Preservation Fund grants. There was one notable exception—for the first time, States could use some of all of their appropriated funds to assist projects in Federal ownership. Funds were awarded in May 1988, but were required to be used for specific properties no later than September 30, 1988. At the end of that 5-month period, the 34 States eligible for a portion of the Fund (minimum \$10,000) selected 78 properties for assistance. Nine of the selected properties are in Federal ownership—five are Fish and Wildlife Service properties, three are National Park Service properties, and one is owned by the Department of Agriculture.

Three of the projects are summarized below.

East Brother Island Light Station, California. Automated by the Coast Guard in the late 1960s, the then-vacant buildings at this light station were slated for demolition, but were saved from the wrecking ball by East Brother Light Station, Inc. Established in 1979 to restore the lighthouse and make it accessible to the public, East Brother Light Station, Inc., with over \$300,000 in private donations and volunteer services, successfully met these objectives. The light station now operates as a bed-and-breakfast; however, the fees collected from this venture, plus day use and volunteer fees, do not generate the revenue needed to cover major repairs. The FY 1988 lighthouse grant enabled East Brother to undertake long-overdue roof replacement, saving the structure from myriad problems associated with water damage.

Grosse Point Lighthouse. Owned and maintained by the Lighthouse Park District of Evanston, Illinois, Grosse Point Lighthouse still operates as a navigational aid. The lighthouse was decommissioned in 1935, and later deeded to the City of Evanston by the Federal Government for its year-round use. Restoration of the structure was begun in 1973, and has included the storeroom, the interior of the tower, and the keepers' quarters. The fog houses were converted in 1981 and now contain a Nature Center (south fog house) which features plants, birds, insects, animals and minerals native to the area; and a Visitor/Maritime Center (north fog house). The Lighthouse grant covered the restoration of portions of both the north and south quarters (keepers' residence), and purchase of a new flashing mechanism. With these projects completed, interest will now be concentrated on funding major renovations, including providing a larger area for interpretive exhibits.

Ocracoke Light Station. The most visited site at Cape Hatteras National Seashore, North Carolina, Ocracoke received a \$17,000 award to prepare a Historic Structures Report. This detailed assessment is to uncover the need for major rehabilitation work, and should lead to the development of a long-range plan for maintenance. After completion of the report, the State will actively seek funding to repair and restore damages uncovered by the assessment.

Carol Minick was a member of the Preservation Assistance Division of the National Park Service in Washington, D.C. and now works for the Department of Education.